IP Manager

Configuring Sierra Wireless AirLink Modem

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Configuring your Sierra Wireless AirLink modem for IP Manager and DNS

If you have a fleet of Sierra Wireless AirLink modems or even if you only have one, it can be difficult to keep track of the current IP addresses, especially if the addresses aren't static but change every time the modems connect to your cellular provider. If you need to connect to a modem, or the device behind it, it is so much easier when you have a domain name (car54.mydomain.com, where are you?).

Reasons to contact the modem and/or the connected device:

- Requesting a location update from a delivery truck.
- Contacting a surveillance camera to download logs or survey a specific area.
- An oil derek that needs to be triggered to begin pumping.
- Sending text to be displayed by a road sign.
- Updating the songs to be played on a juke box.
- Updating advertisements to be displayed in a cab.
- Remote access to a computer, a PLC, an RTU, or other system.
- Monitoring and troubleshooting the status of the modem itself without needing to bring it in or go out to it.

A dynamic IP address is suitable for many Internet activities such as web browsing, looking up data on another computer system, data only being sent out, or data only being received after an initial request (also called Mobile Originated). However, if you need to contact your modem directly, a device connected to the modem, or a host system using your modem (also called Mobile Terminated), a dynamic IP won't give you a reliable address to contact (since it may have changed since the last time it was assigned).

Domain names are often only connected to static IP addresses because of the way most domain name (DNS) servers are set-up. Dynamic DNS servers require notification of IP Address changes so they can update their DNS records and link a dynamic IP address to the correct name.

- Dynamic IP addresses are granted only when your modem is connected and can change each time the modem recon-nects to the network.

- Static IP addresses are granted the same address every time your modem is connected and are not in use when your modem is not connected.

Since many cellular providers, like wire-based ISPs, do not offer static IP addresses or static address accounts cost a premium vs. dynamic accounts, AirLink developed IP Manager to work with a Dynamic DNS server to receive notification from Sierra Wireless AirLink modems to translate the modem's dynamic IP address to a fully qualified domain name. Thus, you can contact your ALEOS powered AirLink modem directly from the Internet using a domain name.

Fully Qualified Domain Name

A domain name is a name of a server or device on the Internet which is associated with an IP address. Similar to how the street address of your house is one way to contact you and your phone number is another, both the IP address and the domain name can be used to contact a server or device on the Internet. While contacting you at your house address or with your phone number employ different methods, using a domain name instead of the IP address actually uses the same method, just a word based name is commonly easier to remember for most people than a string of numbers.

Understanding the parts of a domain name can help to understand how IP Manager works and what you need to be able to configure the modem. A fully qualified domain name (FQDN) generally has several parts.

- **Top Level Domain (TLD):** The TLD is the ending suffix for a domain name (.com, .net, .org, etc.)

- **Country Code Top Level Domain (ccTLD):** This suffix is often used after the TLD for most countries *except the US* (.ca, .uk, .au, etc.)

- **Domain name:** This is the name registered with ICANN (Internet Corporation for Assigned Names and Numbers) or the registry for a the country of the ccTLD (i.e. if a domain is part of the .ca TLD, it would be registered with the Canadian domain registry). It is necessary to have a name registered before it can be used.

- **Sub-domain or server name:** A domain name can have many sub-domain or server names associated with it. Sub-domains need to be registered with the domain, but do not need to be registered with ICANN or any other registry. It is the responsibility of a domain to keep track of its own subs.

    car54.mydomain.com

- **.com** is the TLD
- **mydomain** is the domain (usually noted as mydomain.com since the domain is specific to the TLD)
- **car54** is the subdomain or server name associated with the device, computer, or modem registered with mydomain.com

car54.mydomain.com.ca

This would be the same as above, but with the addition of the country code. In this example, the country code (.ca) is for Canada.

A URL (Universal Resource Locator) is different from a domain name in that it also indicates information on the protocol used by a web browser to contact that address, such as http://www.sierrawireless.com. www.sierrawireless.com is a fully qualified domain name, but the http://, the protocol identifier, is what makes the whole thing a URL.

Dynamic Names

When an IP address is not expected to change, the DNS server can indicate to all queries that the address can be cached and not looked up for a long period of time. Dynamic DNS servers, conversely, have a short caching period for the domain information to prevent other Internet sites or queries from using the old information. Since the IP address of a modem with a dynamic account can change frequently, if the old information was used (such as with a DNS server which indicates the address can be cached for a long period of time) when the IP address changed, the domain would no longer point to the new and correct IP address of the modem.

If your modem is configured for Dynamic IP, when it first connects to the Internet, it sends a IP change notification to IP Manager. IP Manger will acknowledge the change and update the Dynamic DNS server. The new IP address will then be the address for your modem's configured name.

Once your modem's IP address has been updated in IP Manager, it can be contacted via name. If the IP address is needed, you can use the domain name to determine the IP address.

Note: The fully qualified domain name of your modem will be a subdomain of the domain used by the IP Manager server.

Configuring Your Modem

Software Required

- **AceManager** - Graphical interface for entering most AT Commands. You can download AceManager from the Sierra Wireless AirLink Solutions website: http://www.sierrawireless.com.

Software Recommended(Optional)

- **AceView** - Status and connection monitor for your modem. You can download AceView from the website.
- **AceNet** - Multiple modem configuration and monitoring utility for all AirLink modems. With AceNet, you can save a working configuration in AceManager and then load it into several modems concurrently saving time and ensuring all the modems are configured the same. AceNet is available for seperate purchase from your Sierra Wireless representative.

Connecting to your modem with AceManager

1. Start AceManager: Start > All Programs > AirLink Communications > AceManager

Click the Connect button.

- **Serial :** Select **PPP**, **COM1** and enter **12345** for the password and then click *OK*.
- **Ethernet** : Select TCP, enter the IP address of the modem (local default IP address is 192.168.13.31).
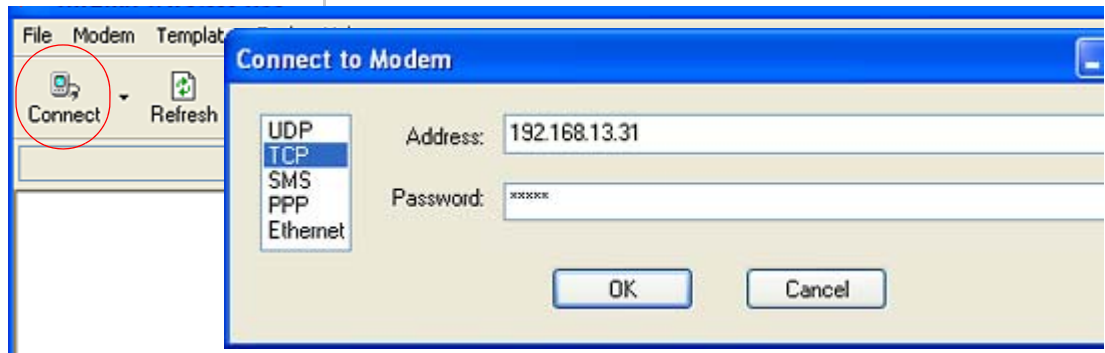

Figure 1: AceManager: Connect - Serial

Figure 2: AceManager: Connect - Ethernet

2. Enter the configuration options.

On the left side of AceManager is the **Groups** menu. Select the appropriate group as directed below. Enter your changes in the **New Value** column. Type in the desired change or using the drop down menus. The current configuration will be shown in the **Value** column.

Figure 3: AceManager: Changing Configuration Options

3. Write the changes to the modem.

Click the **Write** button on the tool bar of AceManager and wait for the message "Write Successful" to appear in the status bar.
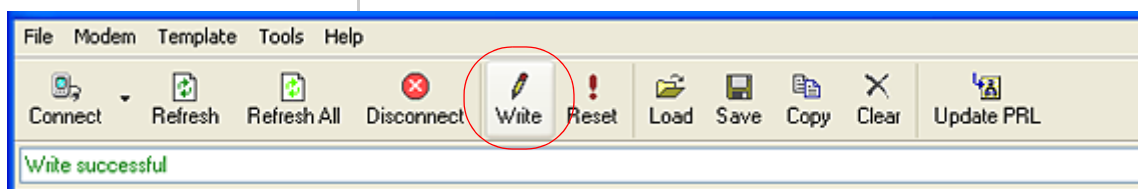

Figure 4: AceManager : Write

Configuring Dynamic IP Domain Name

To configure your AirLink modem to be addressed by name, the modem needs to have 4 elements configured. You can configure a second dynamic server as a backup, secondary, or alternate server. In AceManager, select **Dynamic IP**.

Figure 5:   AceManager : Dynamic IP (Adresse IP dynamique)

Note: eairlink.com server is still available, but Sierra Wireless recommends that customers use edns2server.

*MODEMNAME: The name you want for the modem.

*DOMAIN: The domain name to be used by the modem.
*IPMANAGER1 and ***IPMANAGER2:** The IP address or domain name of the dynamic DNS server which is running IP Manager.

Note: To use the name here instead of the IP, you need to have DNS set up in your modem (**).

*IPMGRUPDATE1 and ***IPMGRUPDATE2:** How often, in minutes, you want the address sent to IP Manager. If this is set to zero, the modem will only send an update if the IP address changes (example, if your modem is reset or is assigned a different IP address).

*IPMGRKEY1 and ***IPMGRKEY2**: User defined password key which is used instead of the Sierra Wireless secret key when using an IP Manager server other than the one provided by Sierra Wireless.

Restrictions for Modem Name

For the Modem Name, you should use something which is unique but also easy to remember. Your company name or the intended function of the modem are recommended. If you have more than one modem and want to name them the same, you can append a number for each. Since it is an Internet domain name, there are some restrictions for the name.

- Must begin with a letter or number
- Can include a hyphen (-)
- Cannot contain spaces
- Must be no longer than 20 characters total

Data Usage for IP Manager Server Updates

The IP Manager update is a small packet sent to the server with a response sent back to the modem. If you have ***IPMGRUPDATE1** or ***IPMGRUPDATE2** set to any number but zero, the modem will send the update not only when it receives a new IP address but at the time interval as well. The data traffic could be billed by your carrier.

Each update is a total of 68 bytes from the modem with a 50 byte total response from the server for a round trip update of 118 bytes.

interval (minutes)	total bytes per day (24 hours)	interval (minutes)	total bytes per day (24 hours)
10	16992 bytes	60	2832 bytes
30	5664 bytes	500	339.84 bytes

Eairlink.com

As a service, Sierra Wireless AirLink Solutions maintains a IP Manager servers which can be used for any AirLink modem.

- *DOMAIN: eairlink.com
- *IPMANAGER1 : edns2.eairlink.com
- *IPMANAGER2 : eairlink.com

Note: The IP Manager service from Sierra Wireless is currently not a guaranteed service though every effort is made to keep it operational 24/7.

When using the IP Manager servers of Sierra Wireless, since there are many modems using the service, it is even more imperative to have a unique name for your modem.

DNS: Using Names Instead of IP addresses

The modem has the ability to query DNS servers in order to translate domain names into IP addresses. This allows you to use domain names in place of IP addresses for most of the configuration options requiring IP addresses. This is important if your modem will need to contact another modem or other device that has a domain name but an unknown or dynamic IP address (such as another remote modem using IP Manager).

Configuring DNS

Generally, when your modem receives its IP address from your cellular provider, as part of the connection process, it will also receive your cellular provider's DNS servers to use for resolving (or translating) names to IP addresses which it will automatically configure in the modem settings. Unless your modem will be used on a network with other modems or devices which have names internal to the local network or frequently changing IP addresses, the DNS servers provided by your cellular provider should be all you need.

If the modem will be communicating with a device that has a domain name but changes its IP address frequently (such as another AirLink modem using IP Manager) or is on a network where devices are accessed by names rather than IP addresses, you will want to put in an alternate DNS (*DNSUSER) where that domain is updated, such as the IP Manager server the remote modem is using or the listing of IP addresses to names is kept.

GROUPS	MODEM DATA			
COMMON	AT	Name	Value	New Value
Misc	*DNS1	Modem DNS Server 1	209.183.48.10	
Serial				
TCP	*DNS2	Modem DNS Server 2	209.183.48.11	
UDP				
DNS	*DNSUSER	Use Alternate DNS	0.0.0.0	
Dynamic IP				
PPP/Ethernet	*DNSUPDATE	DNS Updates	0	
PassThru				

Figure 6: AceManager: DNS

*DNS1 and ***DNS2** - The primary and secondary DNS servers set by your cellular provider when your modem gets its IP address.

*DNSUSER - Set this, if desired, to an additional DNS server to query first before the primary or secondary (just as a hosts file is queried first on a computer). If *DNSUSER is set to 0.0.0.0, it will be ignored.
*DNSUPDATE - This command sets how often you want DNS Updates to be requested. Otherwise the modem will only send updates when it is reset, powered up, or the IP address is granted by network changes.

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*Note: If you will be using your modem to communicate with another AirLink modem and both are using IP Manager to translate dynamic IP addresses to domain names, it is recommended that you set ***DNSUSER** to the IP address for IP Manager. IP Manager's updates occur more frequently than your cellular provider's DNS servers decreasing the time between IP address change and address resolution. Likewise, if your modem routinely needs to contact another modem or device with a Dynamic DNS domain and that modem or device frequently changes its IP address, you may need to set ***DNSUPDATE** for frequent updates.*

PPP-Peer

The Raven and PinPoint use the unqualified domain name of "ppp-peer" when it is in PPP or SLIP address mode to resolve the address of the device or computer connected via PPP or SLIP address. If the modem is not in PPP or SLIP address mode, "ppp-peer" will resolve to 0.0.0.0.

2170042
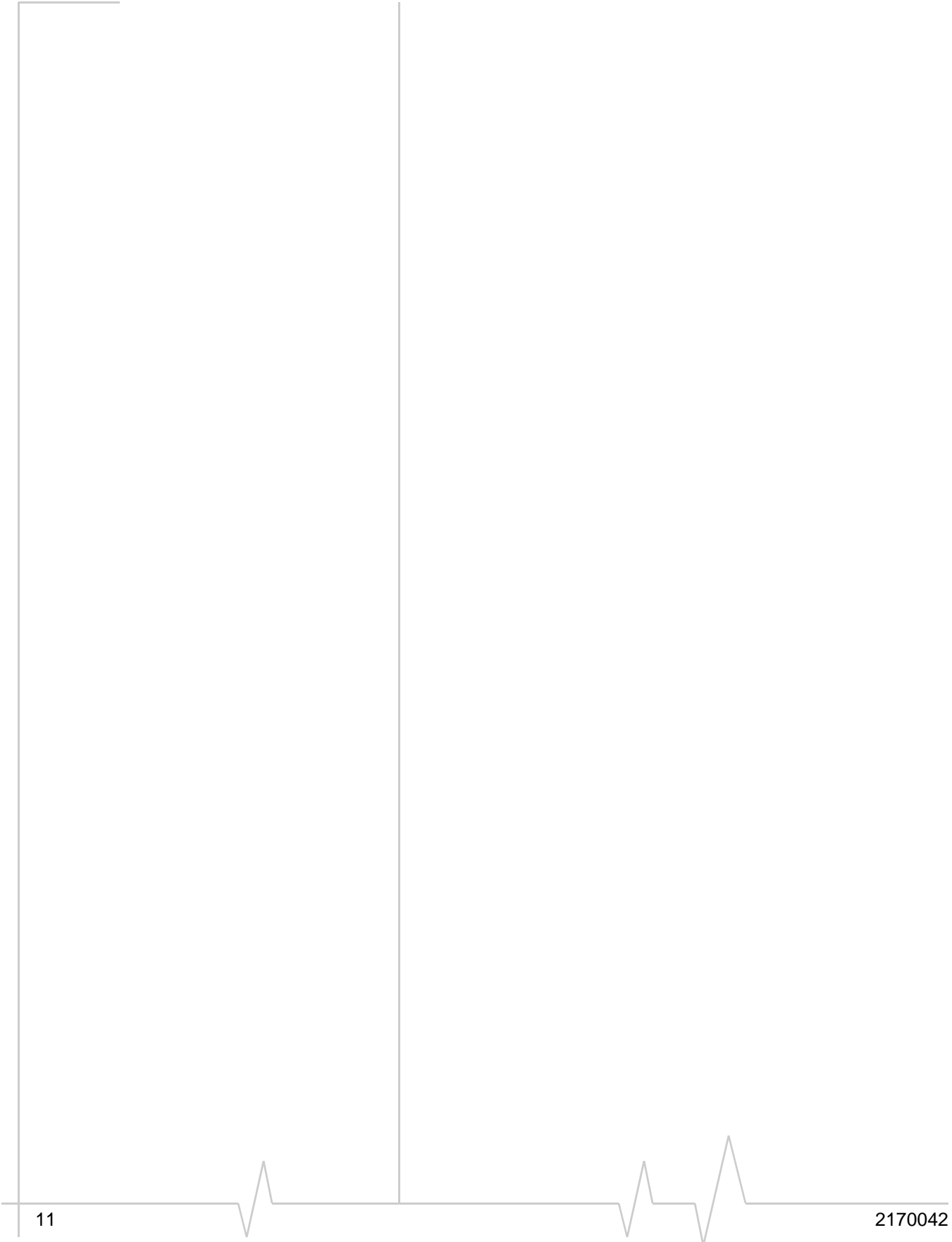
Important Notice

Due to the nature of wireless communications, transmission and reception of data can never be guaranteed. Data may be delayed, corrupted (i.e., have errors) or be totally lost. Although significant delays or losses of data are rare when wireless devices such as the Sierra Wireless modem are used in a normal manner with a well-constructed network, the Sierra Wireless modem should not be used in situations where failure to transmit or receive data could result in damage of any kind to the user or any other party, including but not limited to personal injury, death, or loss of property. Sierra Wireless accepts no responsibility for damages of any kind resulting from delays or errors in data transmitted or received using the Sierra Wireless modem, or for failure of the Sierra Wireless modem to transmit or receive such data.

Safety and Hazards

Do not operate the Sierra Wireless modem in areas where blasting is in progress, where explosive atmospheres may be present, near medical equipment, near life support equipment, or any equipment which may be susceptible to any form of radio interference. In such areas, the Sierra Wireless modem **MUST BE POWERED OFF**. The Sierra Wireless modem can transmit signals that could interfere with this equipment.

Do not operate the Sierra Wireless modem in any aircraft, whether the aircraft is on the ground or in flight. In aircraft, the Sierra Wireless modem **MUST BE POWERED OFF**. When operating, the Sierra Wireless modem can transmit signals that could interfere with various onboard systems.

Note: Some airlines may permit the use of cellular phones while the aircraft is on the ground and the door is open. Sierra Wireless modems may be used at this time.

The driver or operator of any vehicle should not operate the Sierra Wireless modem while in control of a vehicle. Doing so will detract from the driver or operator's control and operation of that vehicle. In some states and provinces, operating such communications devices while in control of a vehicle is an offence.

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5,890,057	5,929,815	6,169,884	6,191,741	6,199,168
6,339,405	6,359,591	6,400,336	6,516,204	6,561,851
6,643,501	6,653,979	6,697,030	6,785,830	6,845,249
6,847,830	6,876,697	6,879,585	6,886,049	6,968,171
6,985,757	7,023,878	7,053,843	7,106,569	7,145,267
7,200,512	D442,170	D459,303		

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5,267,261	5,267,262	5,337,338	5,414,796	5,416,797
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5,544,196	5,568,483	5,600,754	5,657,420	5,659,569
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AirLink Solutions

If you encounter problems with operation of your AirLink wireless gateway, Sierra Wireless product, the support staff of Sierra Wireless AirLink Solutions can help.

Caution: *The configuration suggestions offered in this guide are not supported nor is any equipment other than Sierra Wireless products. Only the operation of the modem or software obtained directly from Sierra Wireless is supported.*

Refer to the User Guide for your modem or the Sierra Wireless AirLink Solutions website for Sierra Wireless product warranties.

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